

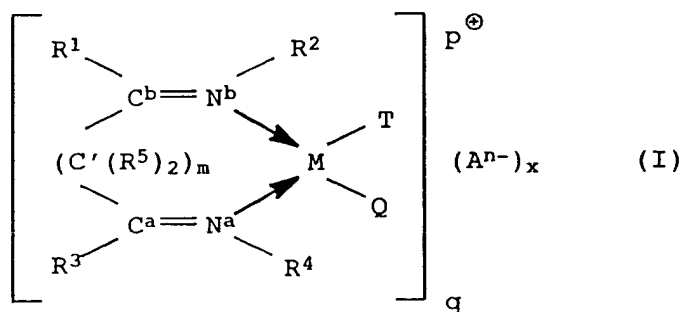
We claim:

1. A transition metal compound of the formula

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where the substituents and indices have the following meanings:

20 R^1, R^3 are hydrogen, $\text{C}_1\text{--C}_{20}$ -alkyl, $\text{C}_3\text{--C}_{10}$ -cycloalkyl, $\text{C}_6\text{--C}_{16}$ -aryl, alkylaryl having from 1 to 10 carbon atoms in the alkyl part and from 6 to 16 carbon atoms in the aryl part, $\text{Si}(\text{R}^6)_3$, $\text{N}(\text{R}^6)(\text{R}^7)$, OR^6 , SR^6 or R^1 and R^3 together with C^a , C^b and, if present, C' form a five-, six- or seven-membered aliphatic or aromatic, substituted or unsubstituted carbocyclic or heterocyclic ring,

30 R^2, R^4 are $\text{C}_4\text{--C}_{16}$ -heteroaryl or $\text{C}_6\text{--C}_{16}$ -aryl bearing $\text{C}_4\text{--C}_{16}$ -heteroaryl or $\text{C}_6\text{--C}_{16}$ -aryl substituents in the two vicinal positions relative to the linkage point to N^a or N^b ,

35 R^5 is hydrogen, $\text{C}_1\text{--C}_{10}$ -alkyl, $\text{C}_6\text{--C}_{16}$ -aryl or alkylaryl having from 1 to 10 carbon atoms in the alkyl part and from 6 to 16 carbon atoms in the aryl part,

40 R^6, R^7 are $\text{C}_1\text{--C}_{10}$ -alkyl, $\text{C}_6\text{--C}_{16}$ -aryl or alkylaryl having from 1 to 10 carbon atoms in the alkyl part and from 6 to 16 carbon atoms in the aryl part,

m is 0 or 1,

45 M is a metal of group VIIIB of the Periodic Table of the Elements,

T, Q are uncharged or monoanionic monodentate ligands or T and Q together form a diketoenolate unit or a $\text{C}_2\text{--}$ or

C₃-alkylene unit having a methyl ketone end group or a linear C₁-C₄-alkylester or nitrile end group,

A is a noncoordinating or weakly coordinating anion,

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x, p are 0, 1, 2 or 3 and

q, n are 1, 2 or 3.

- 10 2. A transition metal compound as claimed in claim 1, wherein R² and R⁴ are, independently of one another, 2,6-diphenylphenyl, 2,6-di(4'-methylphenyl)phenyl, 2,6-di(4'-t-butylphenyl)phenyl, 2,6-di(4'-methoxyphenyl)phenyl,
 - 15 2,6-bis(3',5'-dimethylphenyl)phenyl or 2,6-bis(2',4',6'-trimethylphenyl)phenyl or 2,5-diphenylpyrrolidyl, 2,5-di(4'-methylphenyl)pyrrolidyl, 2,5-di(4'-t-butylphenyl)pyrrolidyl, 2,5-di(4'-methoxyphenyl)pyrrolidyl,
 - 20 2,5-bis(3',5'-dimethylphenyl)pyrrolidyl or 2,5-bis(2',4',6'-trimethylphenyl)pyrrolidyl or 2,5-diphenylpyrrolide, 2,5-di(4'-methylphenyl)pyrrolide, 2,5-di(4'-t-butylphenyl)pyrrolide, 2,5-di(4'-methoxyphenyl)pyrrolide,
 - 25 2,5-bis(3',5'-dimethylphenyl)pyrrolide or 2,5-bis(2',4',6'-trimethylphenyl)pyrrolide.
3. A transition metal compound as claimed in claim 1 or 2, wherein R² and R⁴ are 2,6-di(4'-methoxyphenyl)phenyl or
 - 30 2,5-di(4'-methoxyphenyl)pyrrolidyl.
4. A transition metal compound as claimed in any of claims 1 to 3, wherein M is palladium or nickel.
- 35 5. A transition metal compound as claimed in any of claims 1 to 4, wherein T is halide or methyl and Q is halide.
6. A catalyst system for the (co)polymerization of olefinically unsaturated monomers, comprising as active constituents a
 - 40 transition metal compound as claimed in any of claims 1 to 5 and a strong uncharged Lewis acid, anionic compound having a Lewis-acid cation or an ionic compound having a Brönsted acid as cation as cocatalyst.

7. A catalyst system as claimed in claim 6, wherein an aluminoxane compound is used as strong uncharged Lewis acid or $\text{NaB}[\text{C}_6\text{H}_3(\text{CF}_3)_2]_4$ is used as ionic compound having a Lewis-acid cation.

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8. A process for preparing polymers of olefinically unsaturated polar and/or nonpolar monomers, which comprises polymerizing the starting monomers in the presence of a catalyst system as claimed in claim 6 or 7.

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9. A process as claimed in claim 8, wherein ethene is used as starting monomer.

10. The use of a transition metal compound as claimed in any of claims 1 to 5 or the catalyst system as claimed in claim 6 or 7 for the (co)polymerization of olefinically unsaturated polar and/or nonpolar monomers.

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Polymerization active transition metal complexes having bulky ligand systems

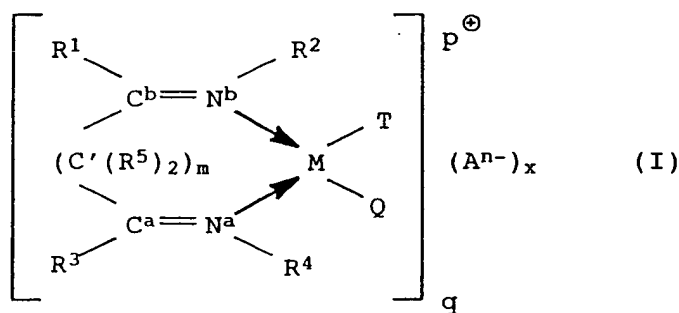
5 Abstract

Transition metal complexes having bulky ligand systems and the formula (I)

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where

25 R^2, R^4 are $\text{C}_4\text{--C}_{16}$ -heteroaryl or $\text{C}_6\text{--C}_{16}$ -aryl bearing $\text{C}_4\text{--C}_{16}$ -heteroaryl or $\text{C}_6\text{--C}_{16}$ -aryl substituents in the two vicinal positions relative to the point of linkage to N^a or N^b and

30 M is a metal of group VIIIB of the Periodic Table of the Elements,

are described.

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